

## CLAIMS

1. A polymer which comprises, optionally consists essentially of:

- (a) from about 5 to about 92.5 wt.-% of at least one alkyl acrylate, the  
5 homopolymers of which have a Tg of less than or equal to about  $-40^{\circ}\text{C}$  (constituent a);  
(b) from about 2.5 to about 30 wt.-% of at least one alkyl (meth)acrylate, the  
homopolymers of which have a Tg of from about  $-25^{\circ}\text{C}$  to about  $0^{\circ}\text{C}$  (constituent b);  
(c) from about 2.5 to about 30 wt.-% of at least one alkyl (meth)acrylate, the  
homopolymers of which have a Tg of from about  $0^{\circ}\text{C}$  to about  $20^{\circ}\text{C}$  (constituent c);  
10 (d) from about 1 to about 30 wt.-% of at least one ethylenically unsaturated  
monomer, the homopolymers of which have a Tg of greater than or equal to about  
 $20^{\circ}\text{C}$ , and which do not contain a functional group selected from hydroxyl, acid, acid  
anhydride, nitro, epoxy and amino groups (constituent d);  
(e) from about 0 to about 10 wt.-% of at least one ethylenically unsaturated  
15 monomer having at least one acid group or acid anhydride group (constituent e); and  
(f) from about 0 to about 60 wt.-% of at least one ethylenically unsaturated  
monomer having either no further functional group or in addition to the ethylenically  
unsaturated group at least one functional group other than an acid or an acid  
anhydride group (constituent f).

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2. A polymer according to claim 1, where constituent 'a' comprises at least one  
alkyl acrylate selected from the group consisting of n-butyl acrylate, 2-ethylbutyl  
acrylate, hexyl acrylate, 2-ethylhexyl acrylate, nonyl acrylate and octyl acrylate.

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3. A polymer according to either preceding claim, where constituent 'b' comprises  
at least one alkyl (meth)acrylate selected from the group consisting of ethyl acrylate,  
sec-butyl acrylate, dodecyl acrylate, isobutyl acrylate and isopropyl acrylate.

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4. A polymer according to any preceding claim, where constituent 'c' comprises at  
least one alkyl (meth)acrylate selected from the group consisting of methyl acrylate  
and n-butyl methacrylate.

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5. A polymer according to any preceding claim, where constituent 'd' comprises a  
monomer which is selected from the group consisting of: (i) alkyl (meth)acrylates, (ii)  
vinylaromatic compounds, (iii) vinylhalides, (iv) vinylnitriles and (v) vinylesters of  
carboxylic acids.

6. A polymer according to claim 5, where constituent 'd' comprises at least one ethylenically unsaturated monomer selected from the group consisting of methyl methacrylate, tert-butyl acrylate, methylstyrene, para-methylstyrene, tert-butylstyrene, styrene, vinyl chloride, methacrylonitrile, vinyl acetate and vinyl formate.

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7. A polymer according to any preceding claim, where constituent 'e' comprises at least one ethylenically unsaturated monomer selected from the group consisting of (meth)acrylic acid, maleic acid, maleic acid anhydride, maleic acid monoester and fumaric acid monoester.

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8. A polymer according to any preceding claim, where constituent 'f' comprises at least one ethylenically unsaturated compound having a group selected from the groups consisting of epoxy groups, hydroxyl groups, ethyl imidazolidone groups, N-methylol groups, carbonyl groups or further ethylenically unsaturated groups which are not conjugated with the other ethylenically unsaturated group.

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9. A polymer according to any preceding claim, where greater than or equal to about 85 wt.-% of the polymer comprises 2-ethylhexyl acrylate, ethyl acrylate and methyl acrylate.

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10. A polymer according to any preceding claim, which comprises 2-ethylhexyl acrylate, ethyl acrylate, methyl acrylate and styrene, and optionally (meth)acrylic acid, ethyl imidazolidone methacrylate, n-butyl acrylate, n-dodecyl methacrylate and/or methyl methacrylate.

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11. A polymer according to claim 10, which comprises:

(a) from about 60 to 70 wt.-% of 2-ethylhexyl acrylate,

(b) from about 10 to about 15 wt.-% of ethyl acrylate,

(c) from about 10 to about 15 wt.-% of methyl acrylate,

30 (d) from about 1 to about 5 wt.-% of styrene,

(e) from about 0.5 to about 2 wt.-% of acrylic acid and from about 0.5 to about 2 wt.-% of methacrylic acid, and

(f) from about 1 to about 5 wt.-% of ethyl imidazolidone methacrylate, from about 0 to about 1 wt.-% of n-butyl acrylate, from about 0 to about 0.5 wt.-% of n-dodecyl methacrylate and/or from about 0 to about 1 wt.-% methyl methacrylate.

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12. An aqueous polymer dispersion comprising a polymer according to any preceding claim which is dispersed in an aqueous medium.

13. A dispersion according to claim 12, which comprises at least one aliphatic emulsifier.

14. A dispersion according to either claim 12 or 13, which comprises at least one  
5 aliphatic emulsifier and one aromatic emulsifier.

15. Use as an adhesive of a polymer according to any of claims 1 to 11 and/or a dispersion according to any of claims 12 to 14 .

10 16. Use, for the preparation of an adhesive, of a polymer according to any of claims 1 to 11 and/or a dispersion according to any of claims 12 to 14.

17. Process for preparing a polymer according to any of claims 1 to 11 and/or a dispersion according to any of claims 12 to 14, by contacting the constituents 'a', 'b',  
15 'c', and 'd' and optionally 'e' and/or 'f' in form of the monomers with a suitable polymerization initiator in a reaction medium.

18. Process according to claim 17, where during polymerization a chain transfer agent is gradually added to the reaction medium.

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19. Process according to either claim 17 or 18, where a polymerized seed is initially added to the reaction medium whereby the composition of the polymerized seed differs in at least one constituent from the composition of the monomers in the reaction medium.

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20. Process according to claim 19, where the polymerized seed contains n-butyl acrylate and the monomers in the reaction medium do not contain n-butyl acrylate.

21. Polymer according to any of claims 1 to 11 and/or a dispersion according to  
30 any of claims 12 to 14, which is obtained and/or obtainable from the process according to any of claims 17 to 20.